



NHA SYMPOSIUM

*April 19-22, 2004
Jacksonville, Florida*

COL Dave Kerrick, USMC
Naval Safety Center



The Bottom Line

***Safety = Savings = Improved
Readiness***

(\$4.4 Billion + 1,138 Lives)*

****USN/USMC FY99-04, as of 13 April
2004***



THE CHALLENGE ➡ ***GETTING THERE!***

NSC FY04 Data: 13 Apr 04



Where We Are

FY03

232 Sailors and Marines Died!



FY02-04 FATALITIES

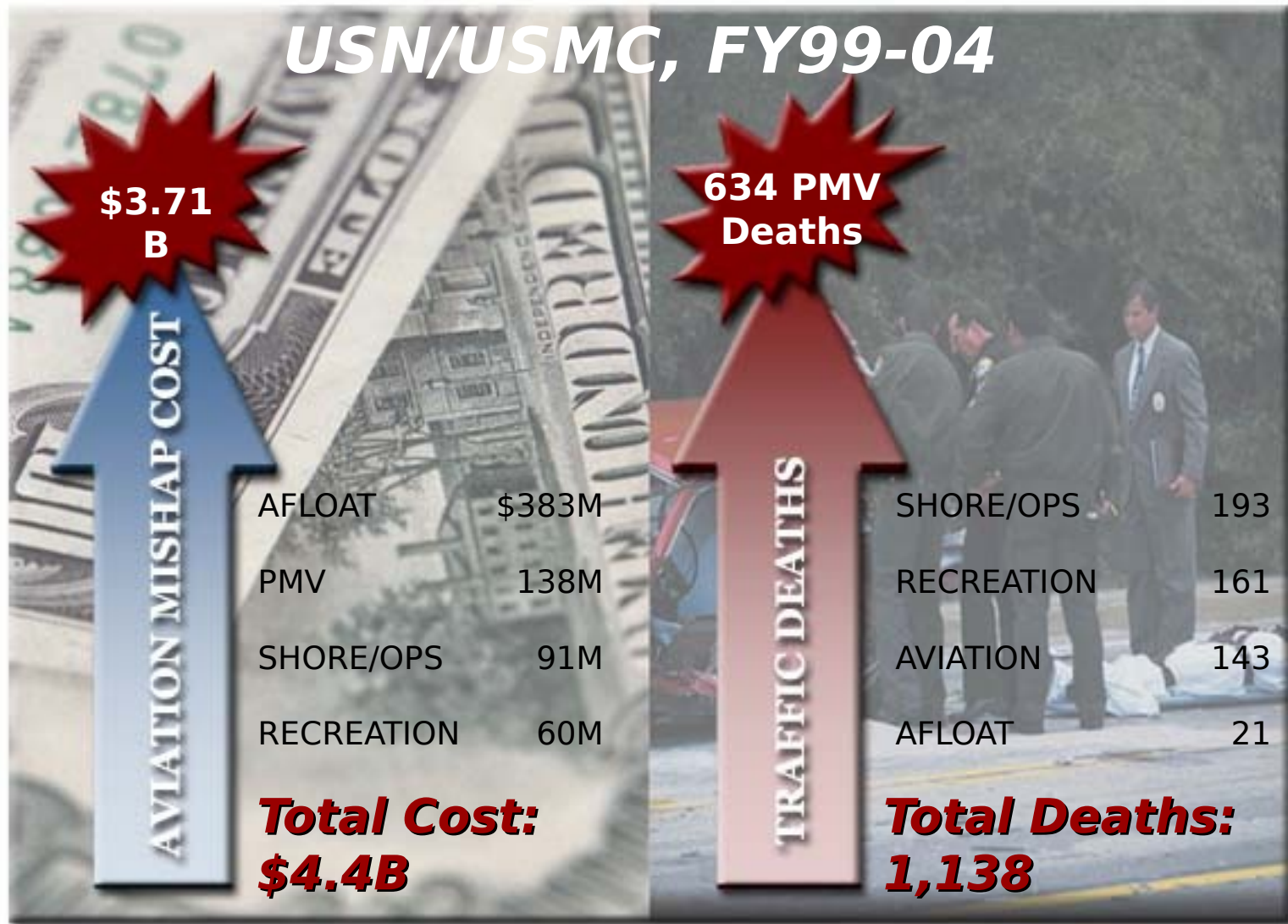
- ***238 Sailors and Marines died in FY02 (\$706M)***
- ***96 Sailors and Marines have died in FY04 alone! (\$587M)***

NSC FY04 Data: 13 Apr 04



Cost and Deaths

USN/USMC, FY99-04



NSC FY04 Data: 13 Apr 04



Mishap Costs

DIRECT COSTS →

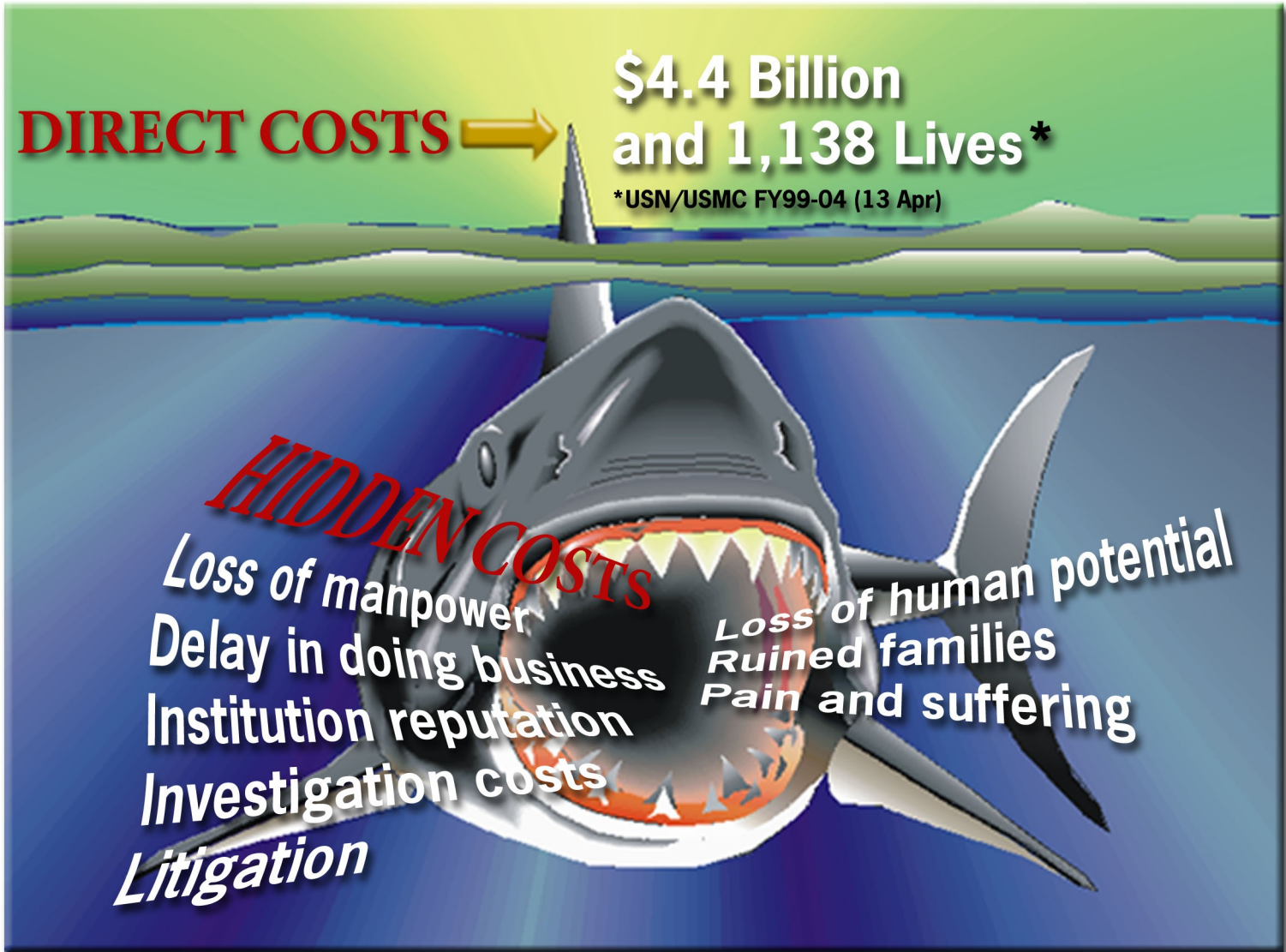
**\$4.4 Billion
and 1,138 Lives***

*USN/USMC FY99-04 (13 Apr)

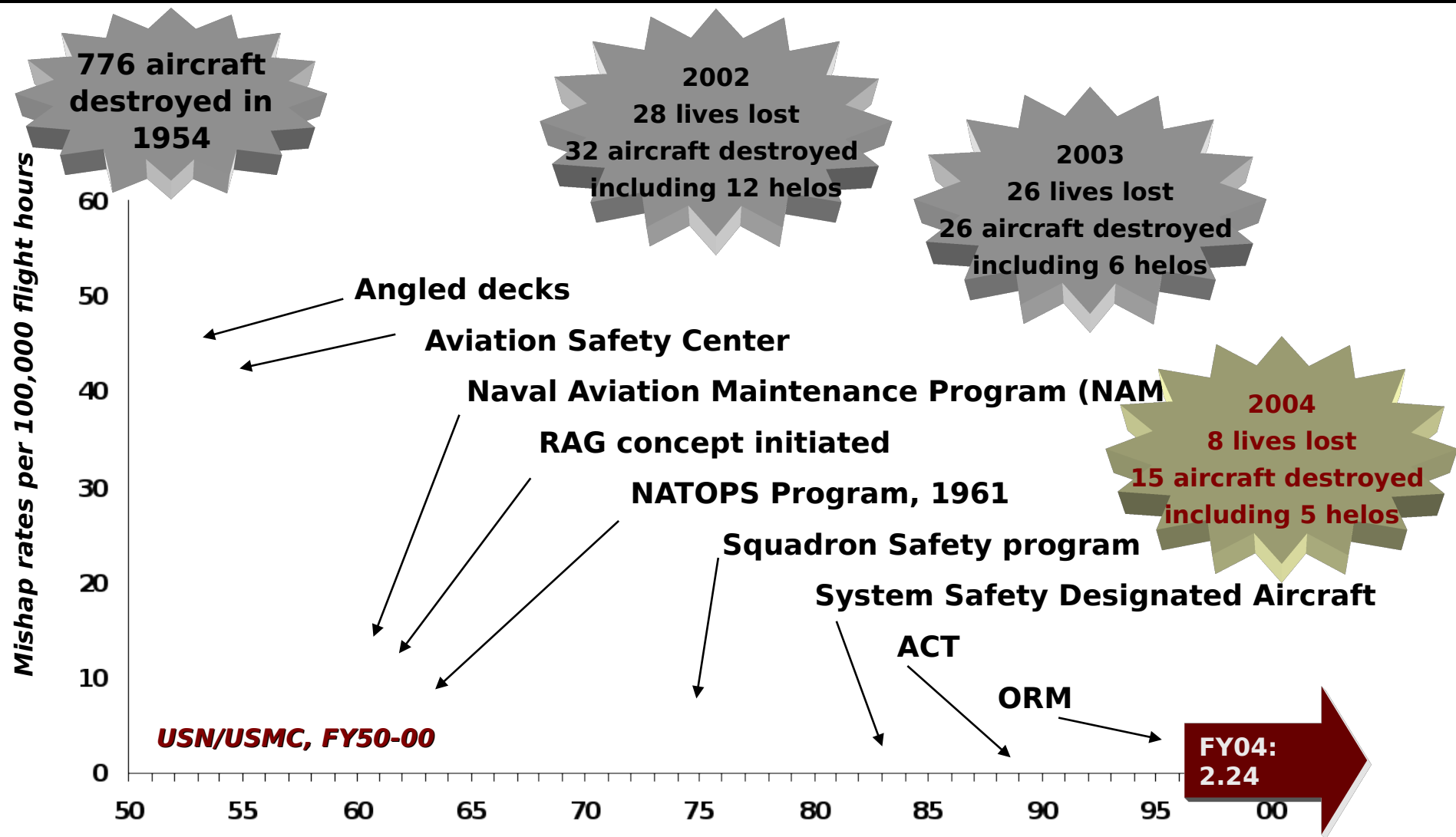
HIDDEN COSTS

*Loss of manpower
Delay in doing business
Institution reputation
Investigation costs
Litigation*

*Loss of human potential
Ruined families
Pain and suffering*



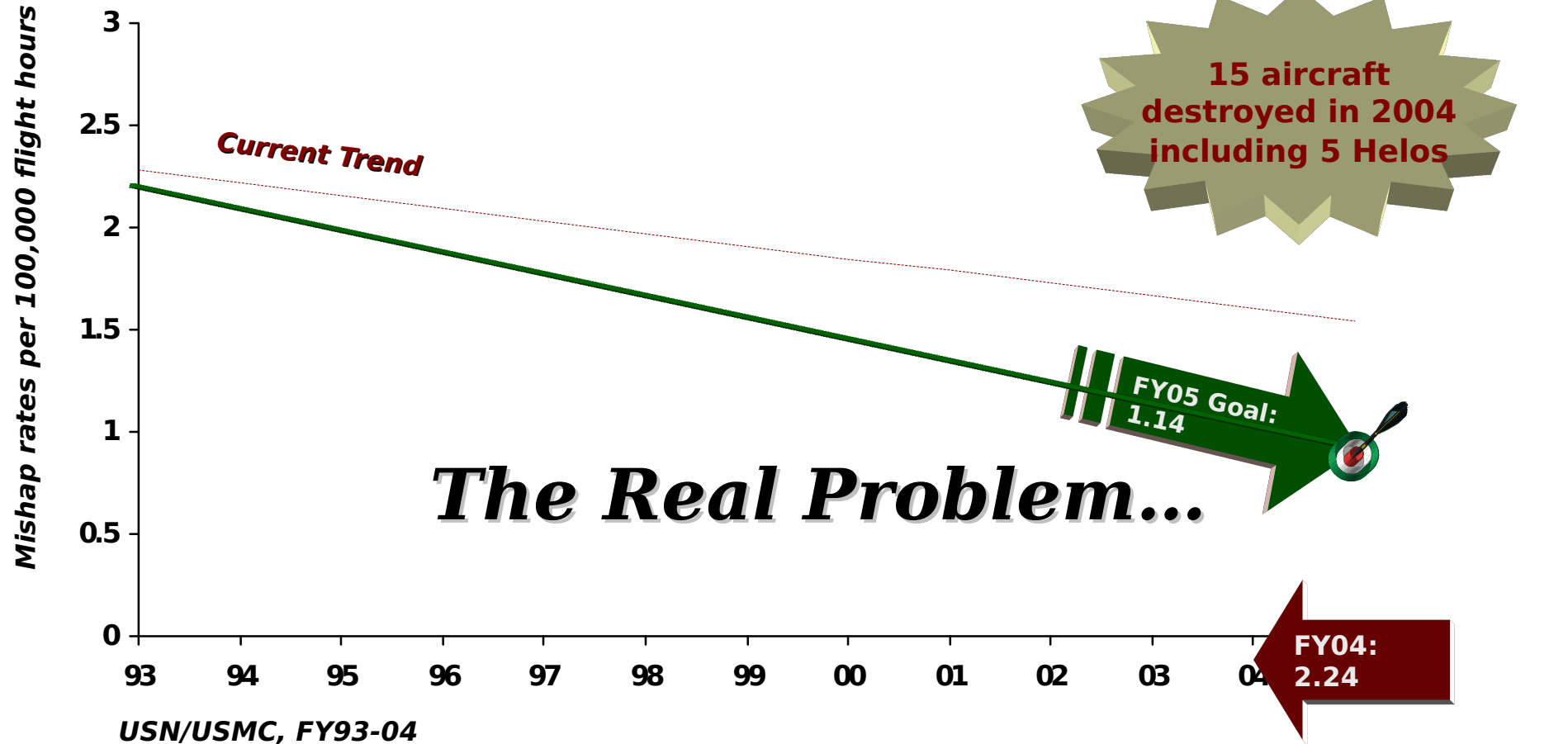
Naval Aviation Mishap History



NSC FY04 Data: 13 Apr 04



Naval Aviation Mishap Trend



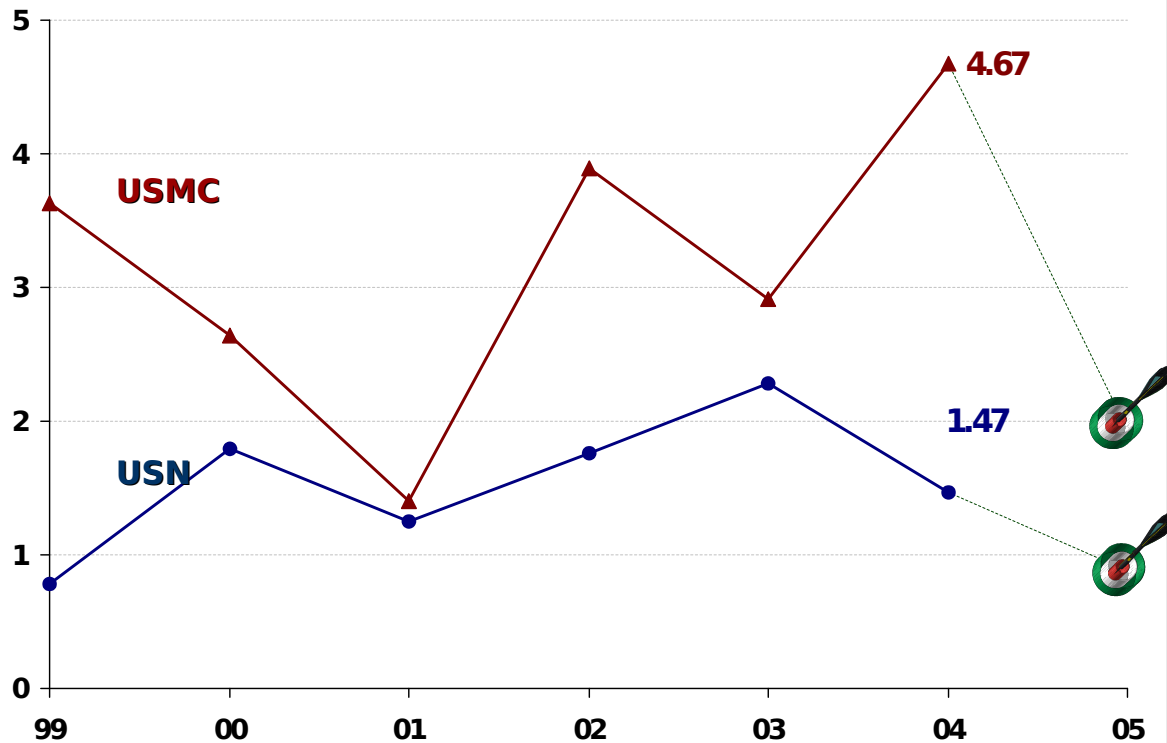
NSC FY04 Data: 13 Apr 04



Class A Flight Mishap Rates

USN/USMC FY99-04

Mishap Rates per 100,000 flight hours



USN/USMC	FY02	FY03	FY04
Total Mishaps	23	29	12
F-18	6	12	6
F-14	4	4	1
EA-6B	2	4	0
S-3	1	3	0
E-2	0	2	0
HELOS			
UH-1	3	2	2
AH-1	1	1	2
H-53	3	1	0
SH-60	3	0	1

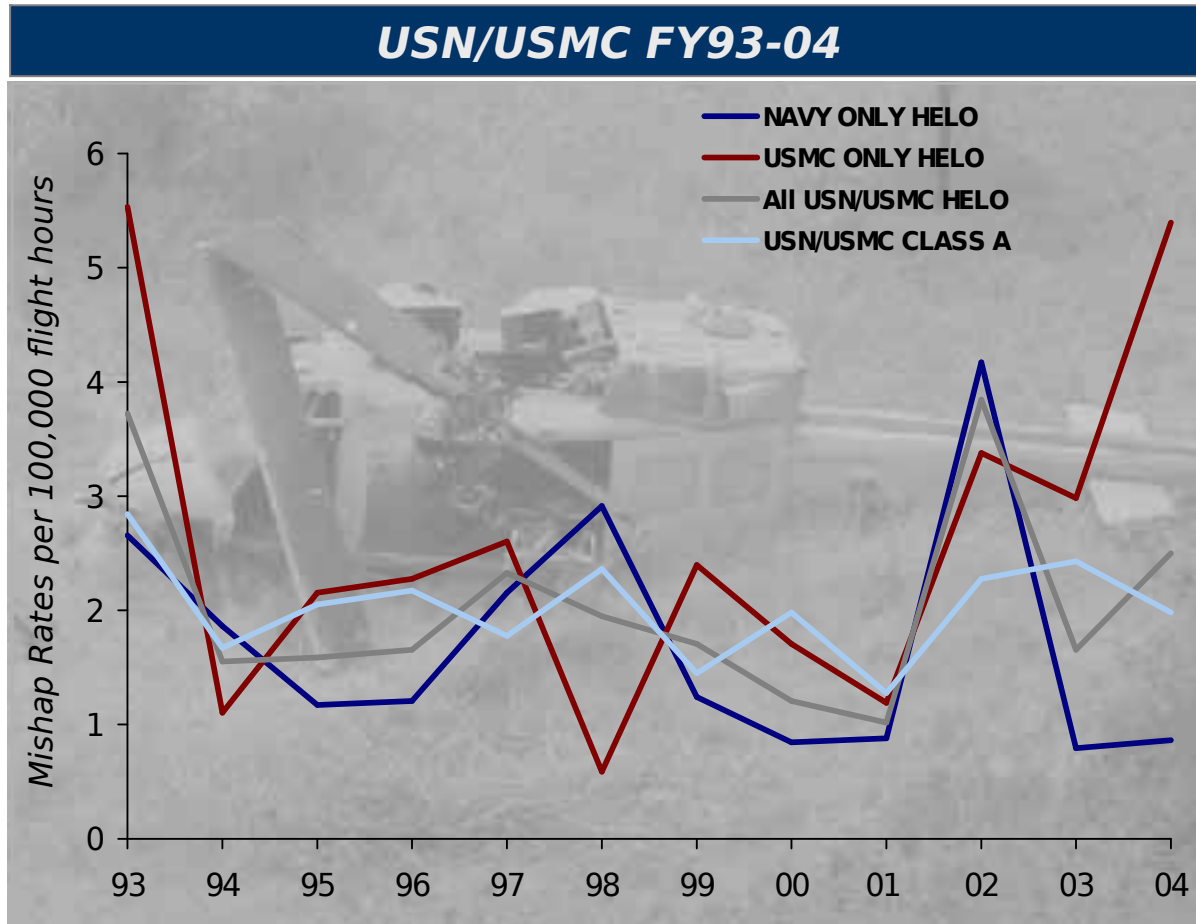
USMC FY05 Goal:
1.94

USN FY05 Goal:
0.88

NSC FY04 Data: 13 Apr 04



Helo Class-A Flight Mishaps



FY04 HELO MISHAPS

USN 0.87

USMC 5.39

ALL HELO 2.65

ALL CLASS A 2.24

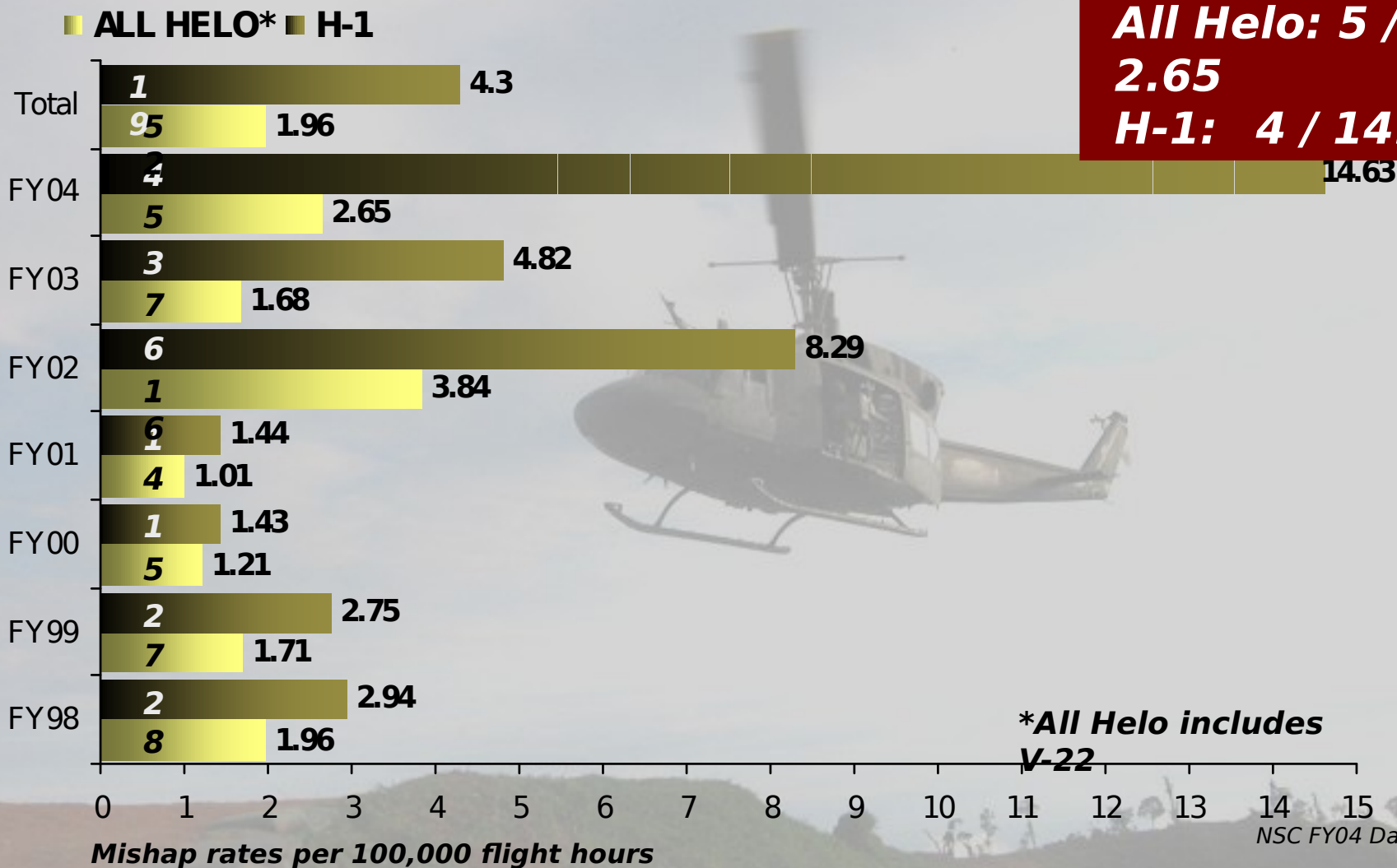
Helo includes V-22

NSC FY04 Data: 13 Apr 04



USN/USMC Helo vs. H-1

Class-A Flight Mishaps FY98-04



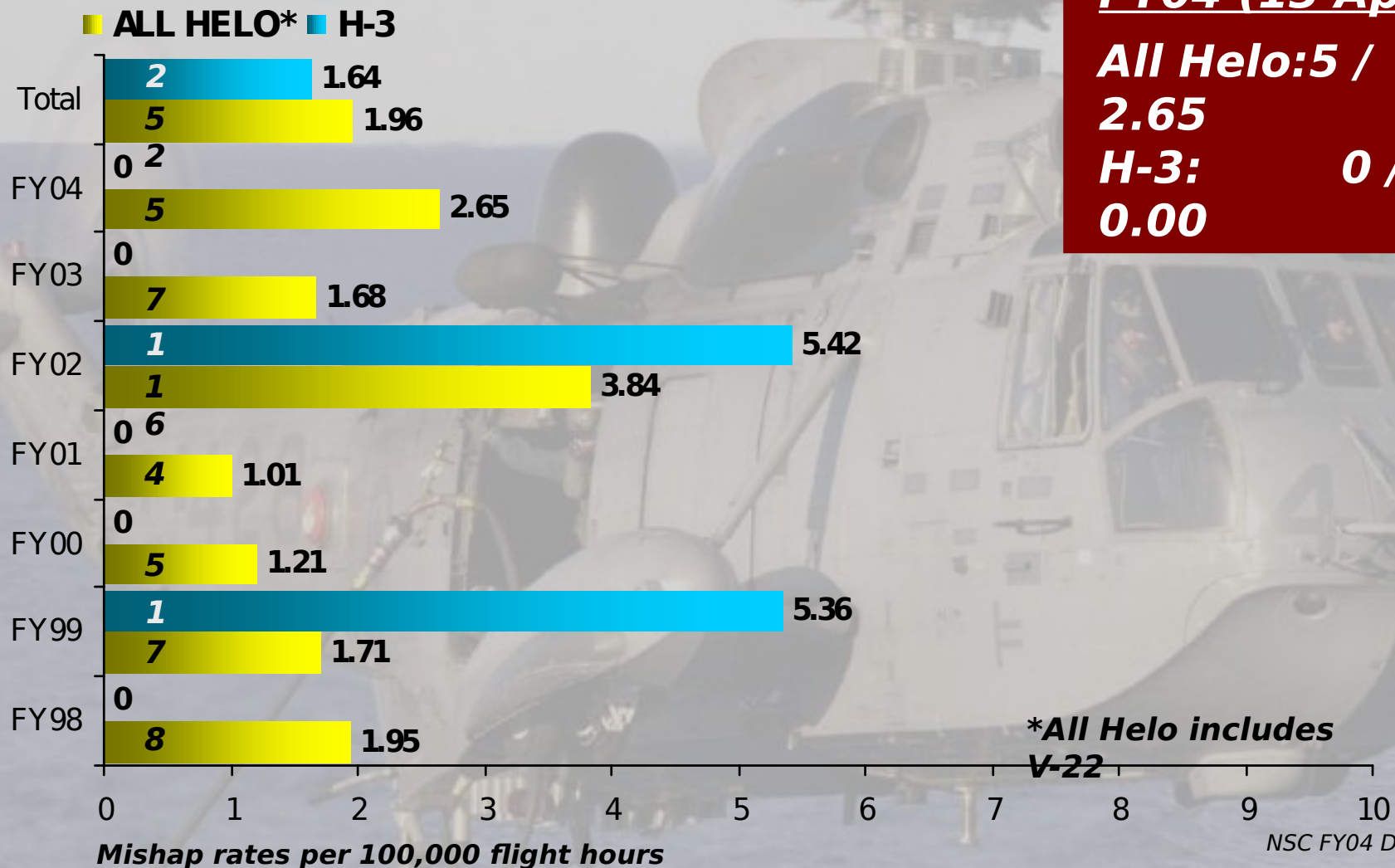
FY04 (13 Apr)
All Helo: 5 /
2.65
H-1: 4 / 14.63

***All Helo includes
V-22**



USN/USMC Helo vs. H-3

Class-A Flight Mishaps FY98-04



FY04 (13 April)

All Helo: 5 /

2.65

H-3: 0 /

0.00

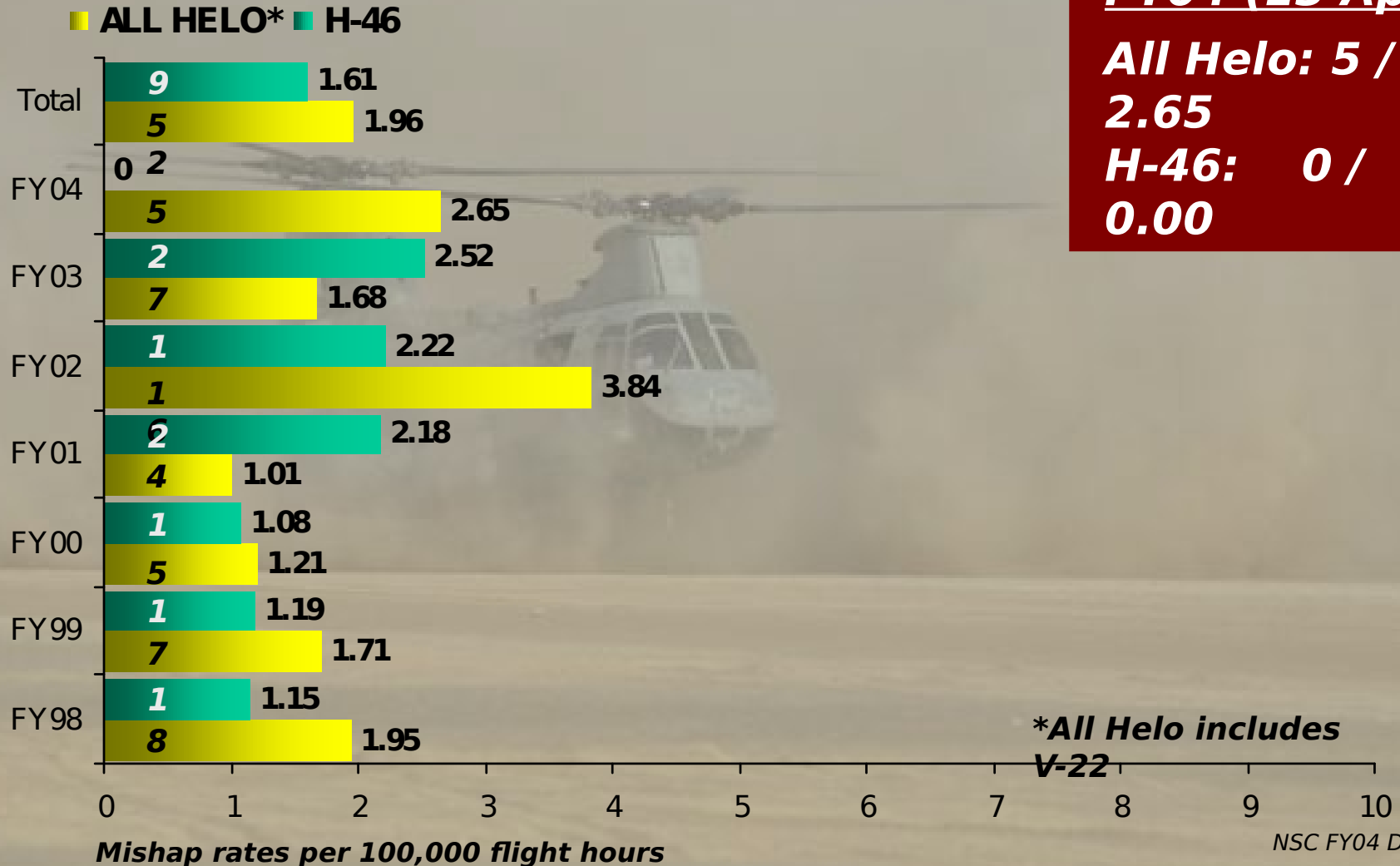
***All Helo includes
V-22**

NSC FY04 Data: 13 Apr 04



USN/USMC Helo vs. H-46

Class-A Flight Mishaps FY98-04



FY04 (13 April)

All Helo: 5 /

2.65

H-46: 0 /

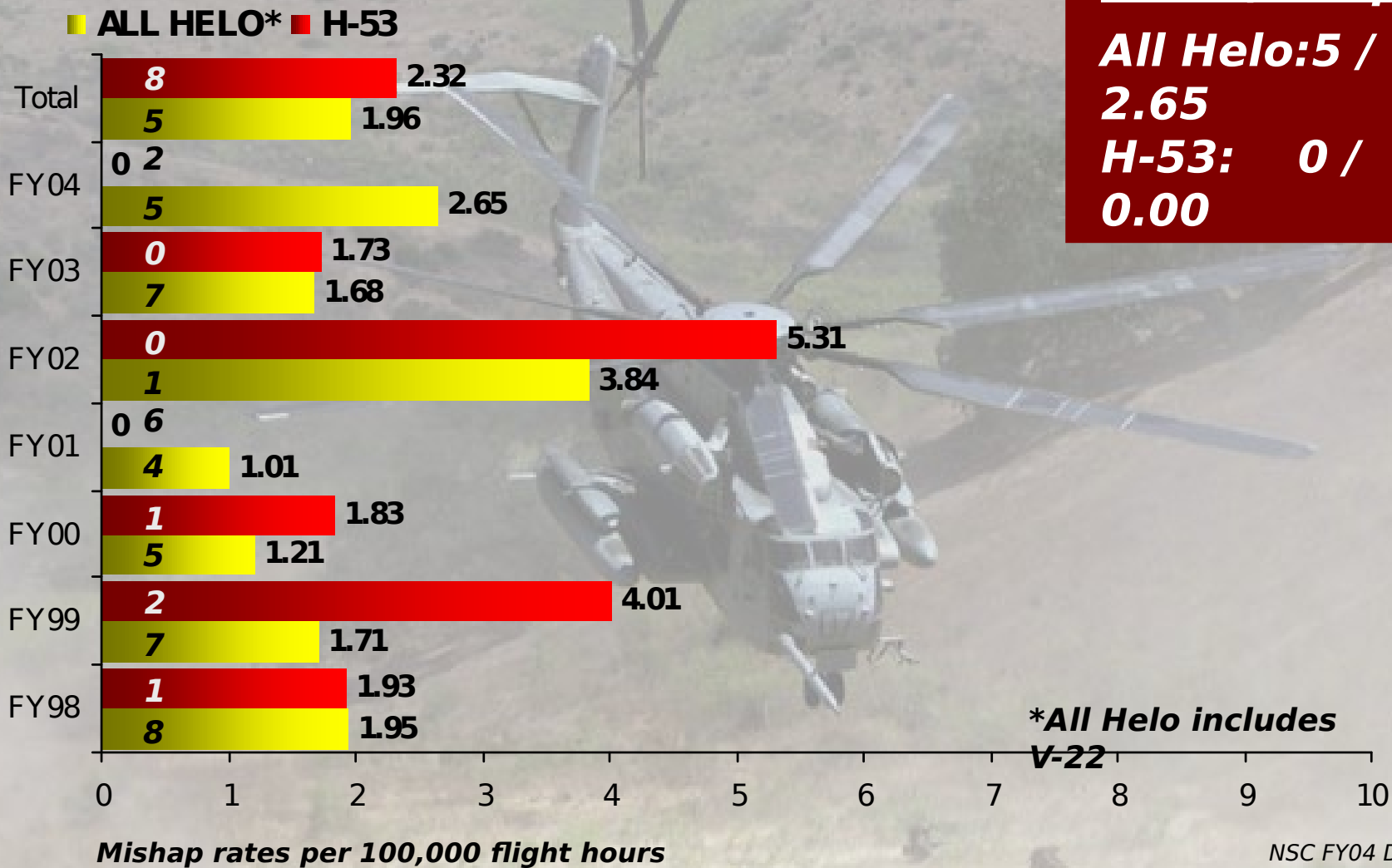
0.00

NSC FY04 Data: 13 Apr 04



USN/USMC Helo vs. H-53

Class-A Flight Mishaps FY98-04

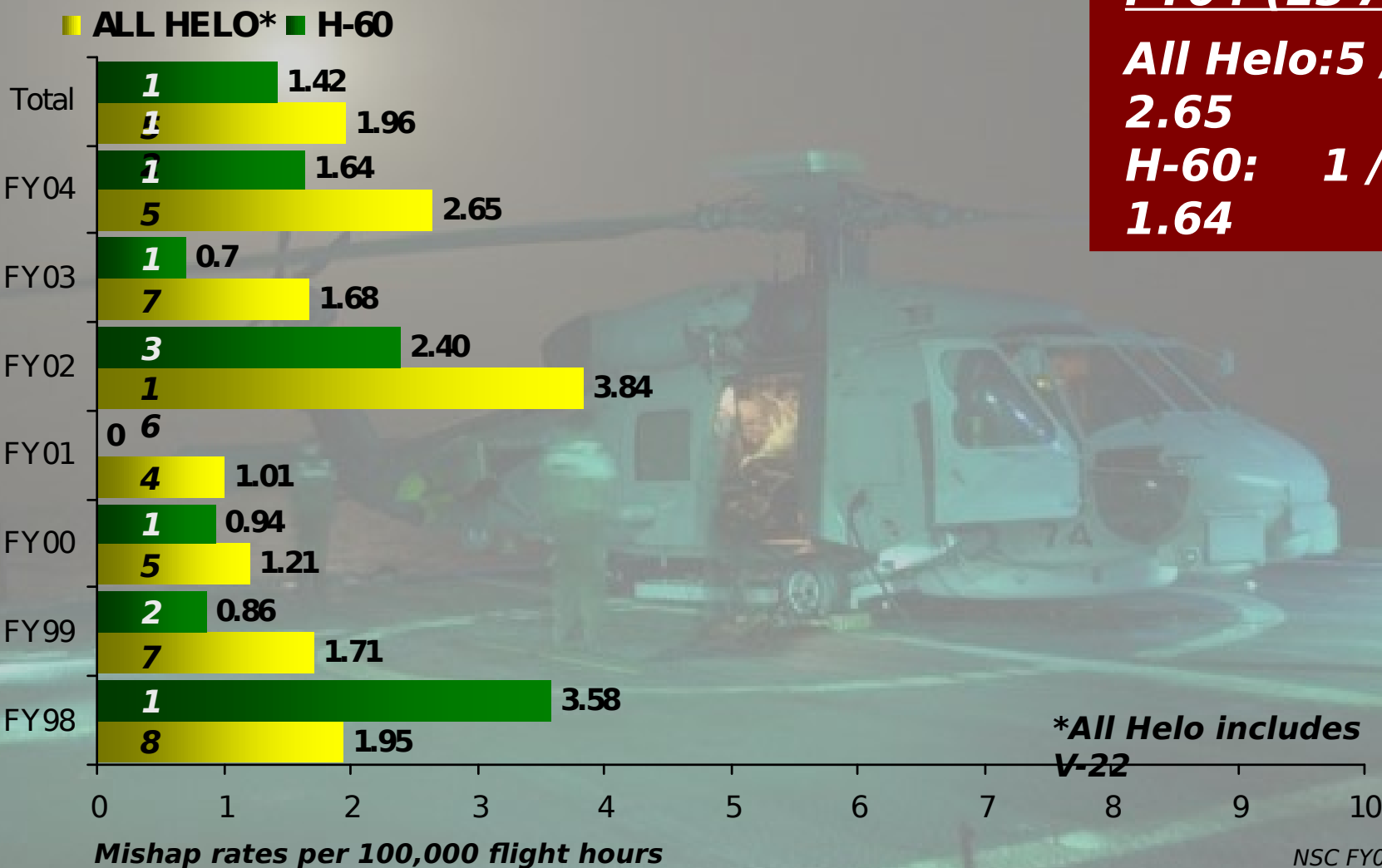


NSC FY04 Data: 13 Apr 04



USN/USMC Helo vs. H-60

Class-A Flight Mishaps FY98-04



FY04 (13 April)
All Helo: 5 / 2.65
H-60: 1 / 1.64

NSC FY04 Data: 13 Apr 04

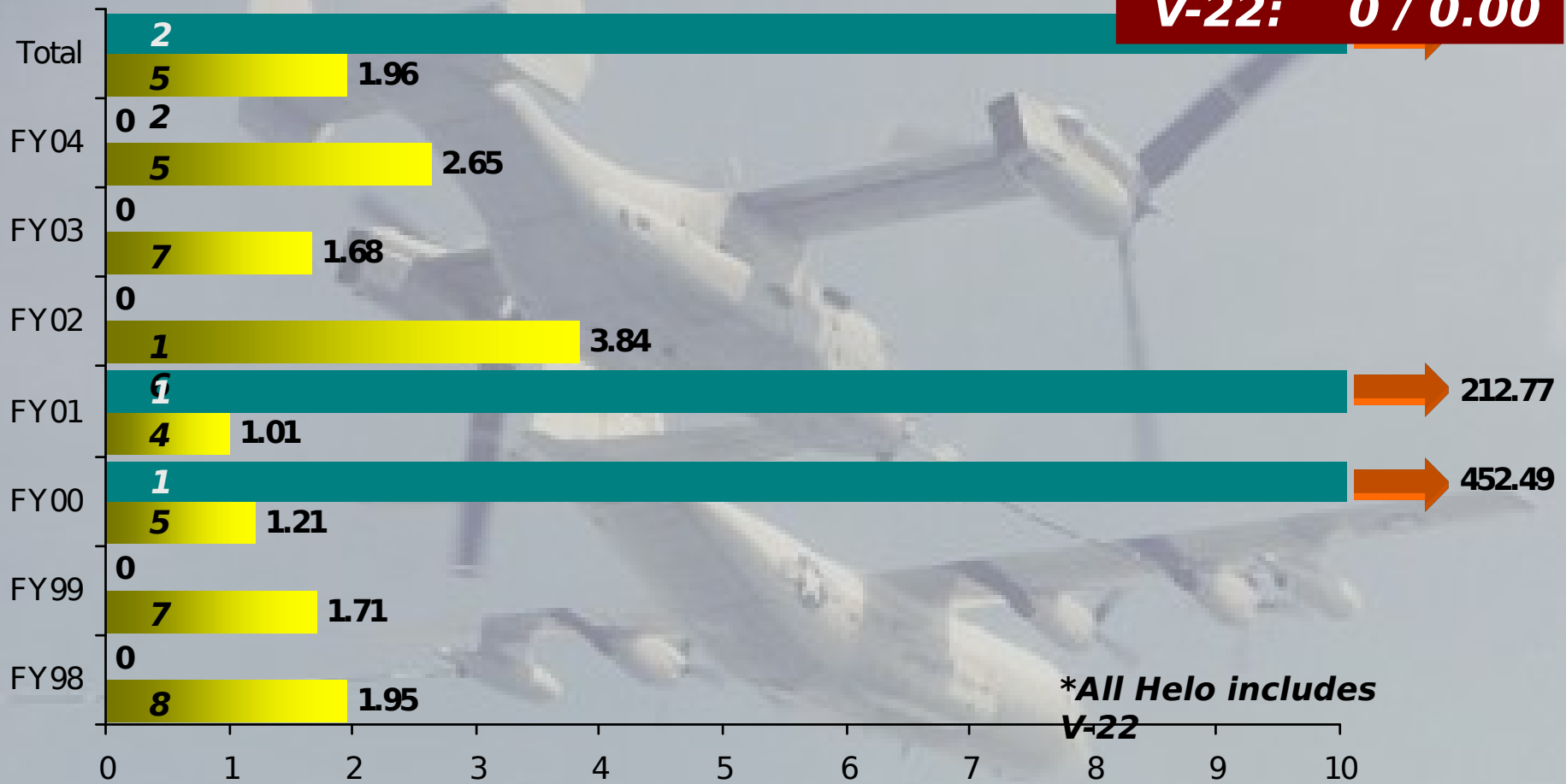
USN/USMC Helo vs. V-22

FY04 (13 April)

All Helo: 5 / 2.65

V-22: 0 / 0.00

■ ALL HELO* ■ V-22



***All Helo includes V-22**

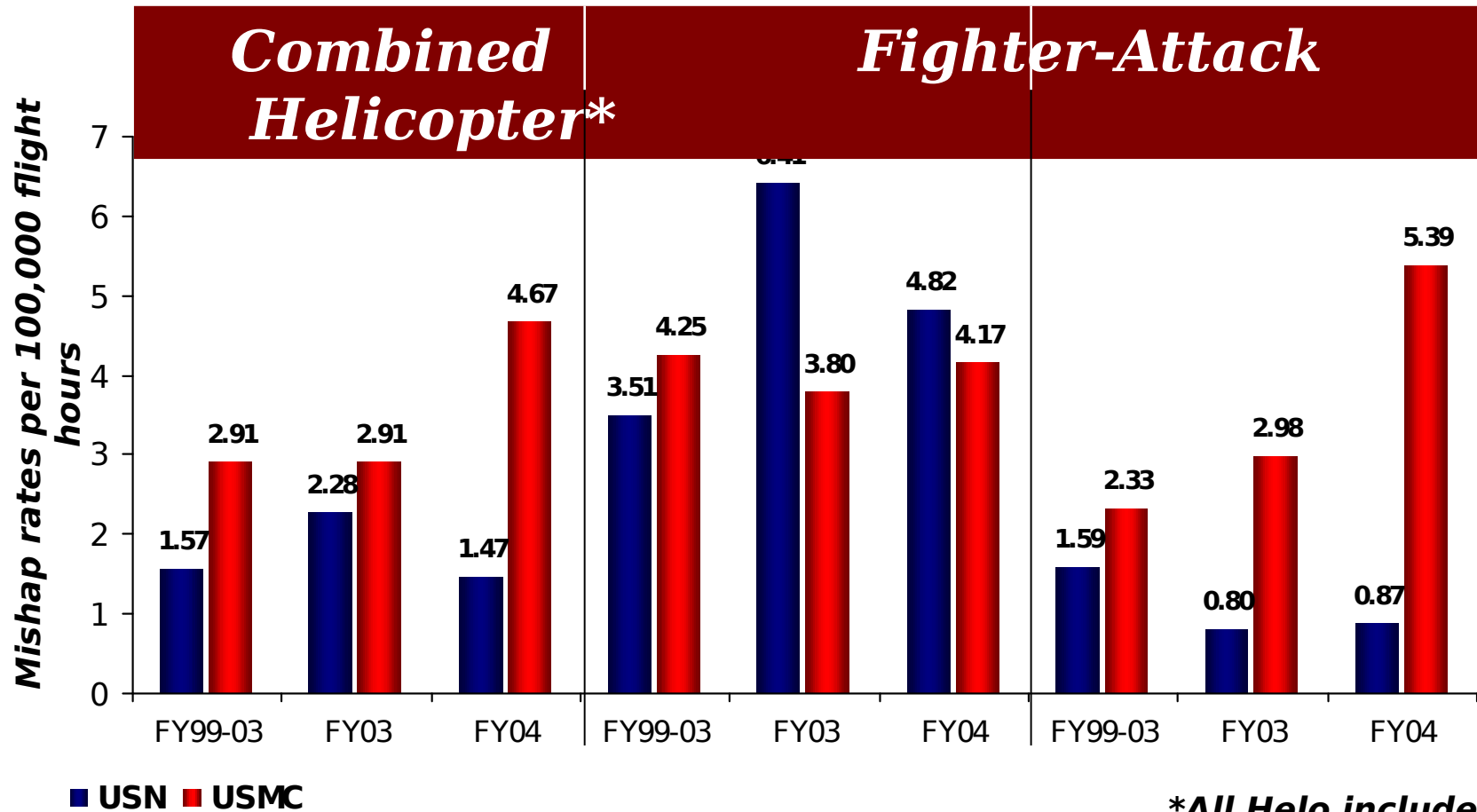
Mishap rates per 100,000 flight hours

NSC FY04 Data: 13 Apr 04



Tactical Aircraft Comparison

USN/USMC FY99-04



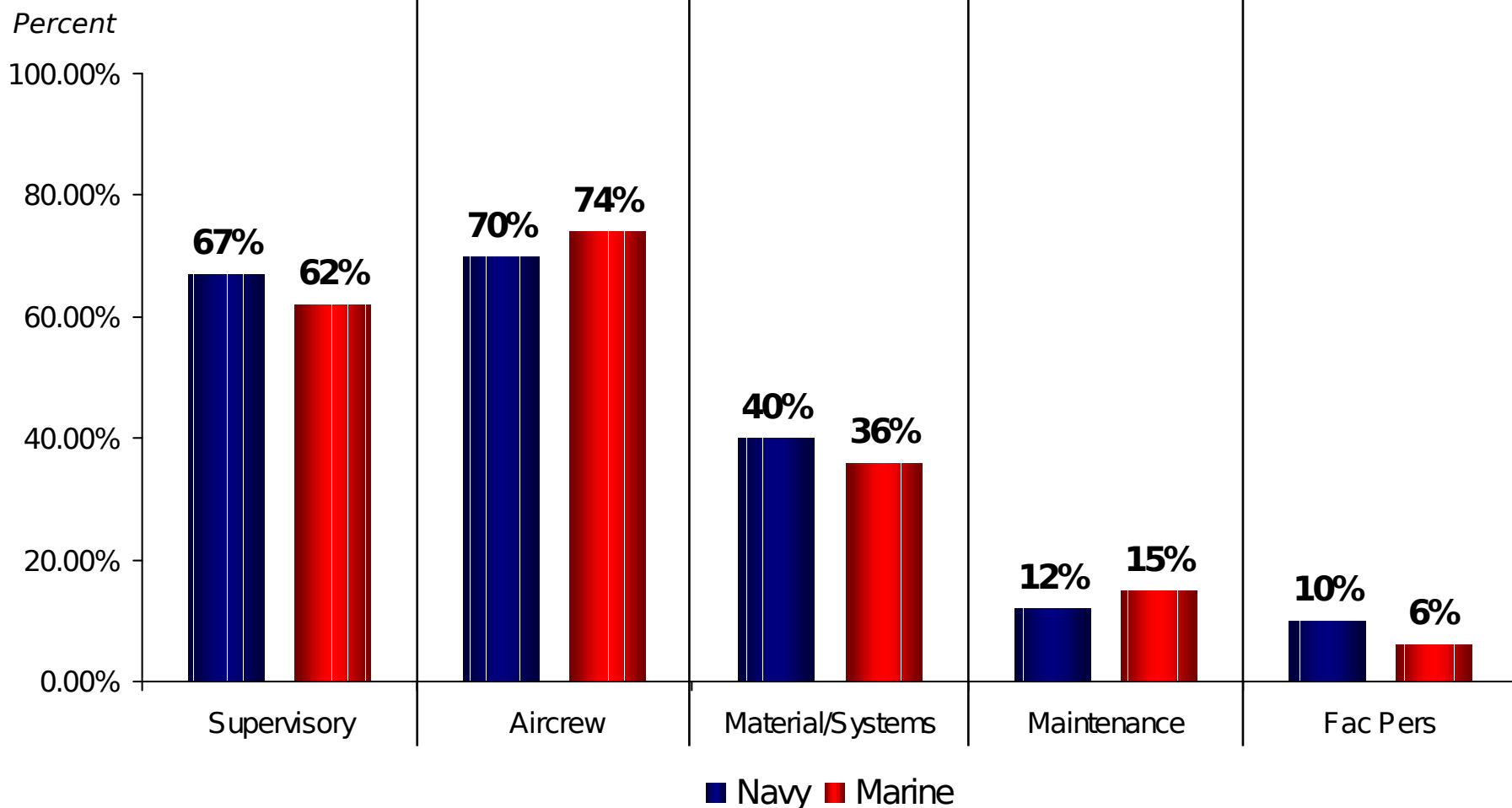
***All Helo includes V-22**

NSC FY04 Data: 13 Apr 04



Cause Factors of Aviation Mishaps

USN/USMC Class-A Flight Mishaps FY99-04



Skill-Based Error Breakout

SBE Breakout for CFIT, OOCF, and MIDAIRs (USN HELO)

H-1 (HH/UH), H-46, H-53, H-60

TOTAL SBE-RELATED MISHAPS: 19

SBE Breakout	SBE-Related Mishaps	% of Total SBE-Related Mishaps
CFIT	13	68%
OOCF	5	26%
MIDAIR	1	6%

(USMC HELO)

H-1 (AH/UH), H-46, H-53

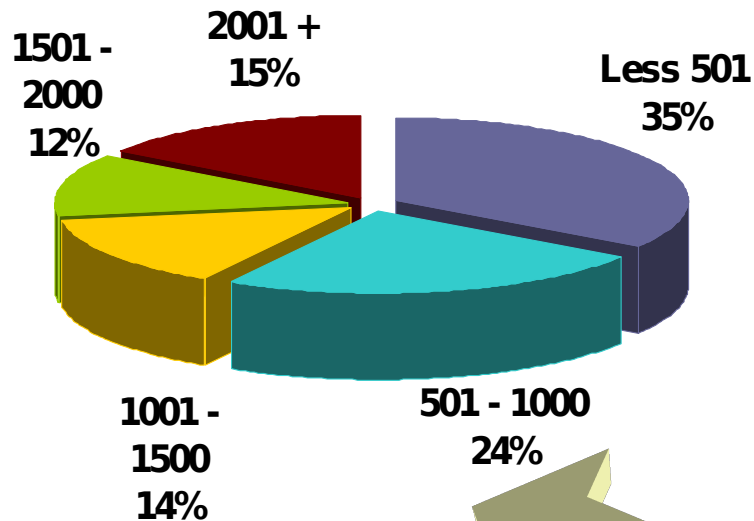
TOTAL SBE-RELATED MISHAPS: 16

SBE Breakout	SBE-Related Mishaps	% of Total SBE-Related Mishaps
CFIT	6	38%
OOCF	8	50%
MIDAIR	2	12%

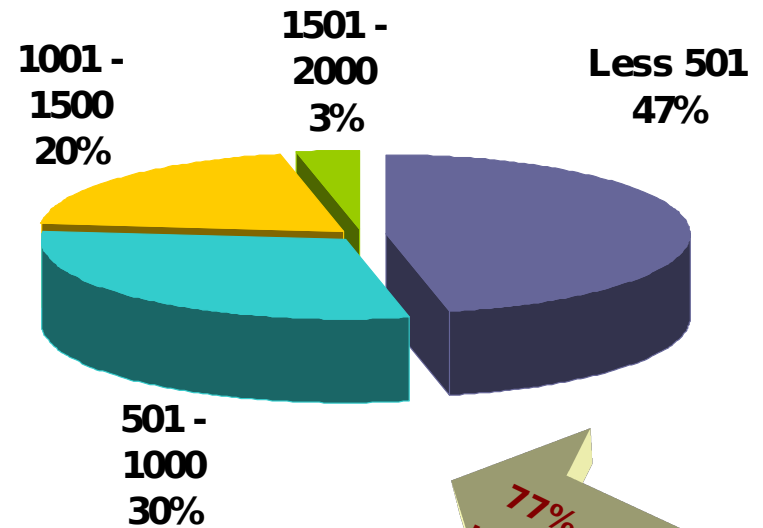
Based on Mar 91 - Sep 02 Post-Desert Storm study.



Helo In-Model Flight Hour Distribution vs. Helo Skill-Based Errors



***HELO Pilot
Flight Hour Distribution***



***% Skill-Based Error
Mishaps***

Based on Mar 91 - Sep 02 Post-Desert Storm study (30 mishaps).



TAKEAWAYS

H-60 SBE CFIT

- *Visual/Inst. Scan Brkdwn (5 of 8 at night; 3 NVDs used)*
- *50% embarked (25% H-60 flt time is embarked)*

H-1 CFIT/OOCF

- *50% involved SAR evolutions*

H-53 CFIT

- *100% involved takeoff and transition to forward flight*

COUNTERMEASURES

H-60

- *Scan practices*
- *NVD currency/quals*
- *ORM embarked OPS*

H-1

- *ORM SAR/embarked OPS*

H-53

- *Take-off procedures/parameters*

USMC Helo

TAKEAWAYS

USMC HELO OOCF

- **88% during take-off/landing phase**
 - **5 involved misuse of flt cntls**

H-53 CFIT

- **75% involved 'pwr rqrd excdng pwr avail' or 'vortex-ring state'**

AH-1 SBE MIDAIR

- **100% visual scan breakdown during formation flight**

AH-1 SBE CFIT

- **100% at night (1 NVDs used)**

COUNTERMEASURES

USMC HELO

- **ORM takeoff/landing SOP practices**

AH-1 MIDAIR

- **Scan practices, esp formation flt**

AH-1 CFIT

- **Night approach procedures**

H-53 OOCF

- **Wind effects on landing**



Aviation Trends and Takeaways

TRENDS

Mishap

Investigations

- Human error (aircrew):
Leading causal factor
 - Skill-based errors
 - CRM failures
 - Violations
- Inexperience
- Training issues

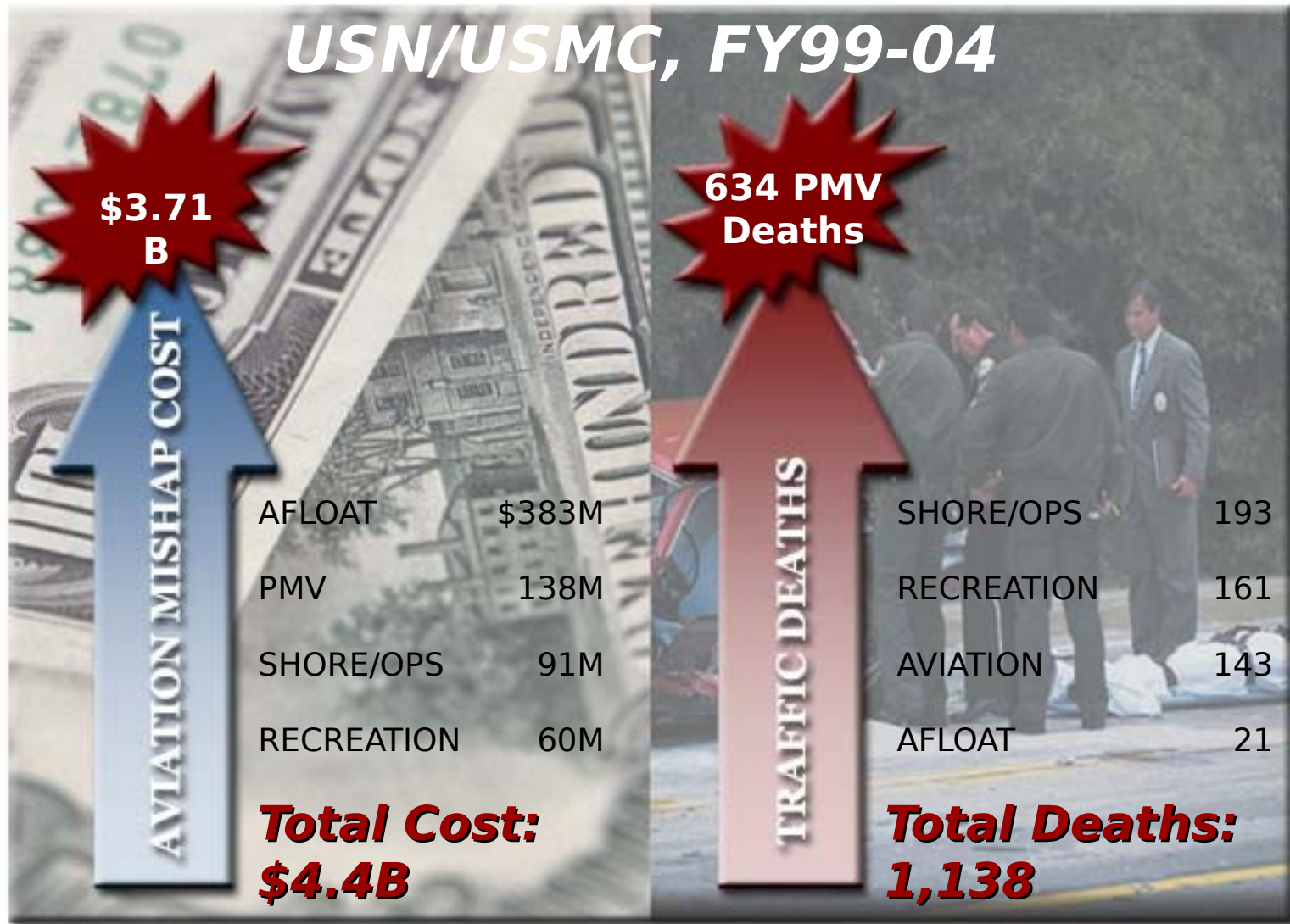
TAKEAWAYS

- State-of-art simulators and data centric systems
- Training
- Proficiency
- Institutionalize ORM
- Enforce standards
- Increase checks and balances



Cost and Deaths

USN/USMC, FY99-04



NSC FY04 Data: 13 Apr 04



PERSPECTIVE

"IN 1968, WE LOST 99 AMERICAN
SAILORS IN USS SCORPION,
WHICH WE THINK OF AS
A NATIONAL DISASTER;
WHILE WE LOST
103 SAILORS AND MARINES
IN PMV ACCIDENTS IN 1998,
AND CALL IT OUR 'BEST YEAR'!"

ROBERT B. PIRIE

ACTING SECRETARY OF THE NAVY

20 JANUARY - 24 MAY 2001

There are no memorials
to honor service members
who died in car accidents.

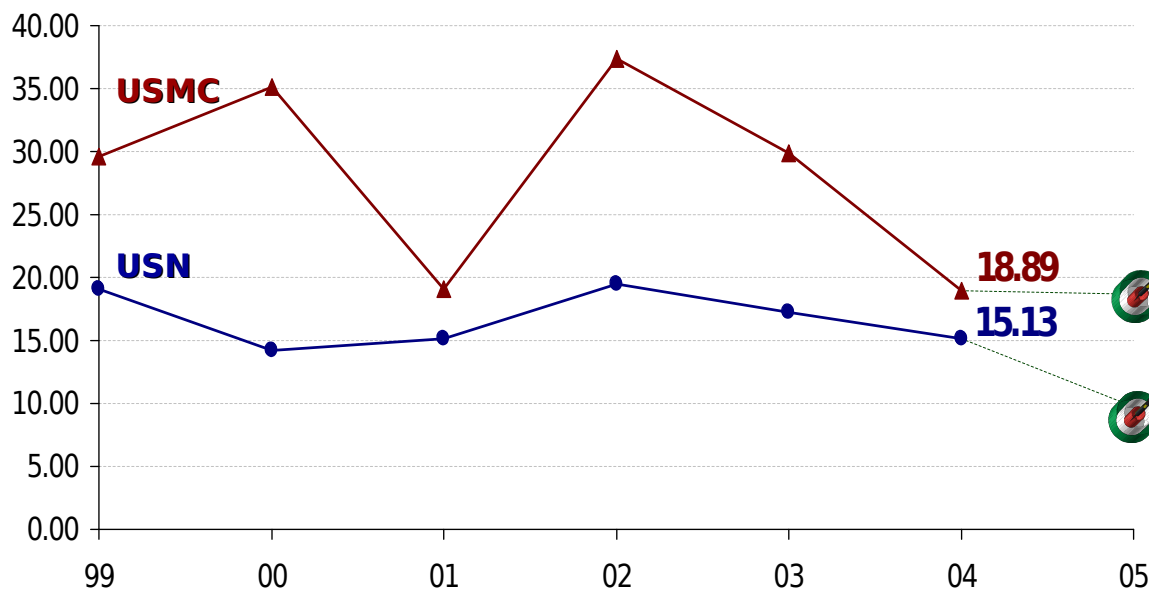
**WHY DO WE ACCEPT
ACCIDENTS?**



PMV Fatality Rates

USN/USMC FY99-04

Fatality Rates per 100,000 personnel per year



USN/USMC	FY02	FY03	FY04
Total PMV Fatalities	140	119	49
SAILORS	75	66	31
MARINES	65	53	18

USMC FY05 Goal: 18.70

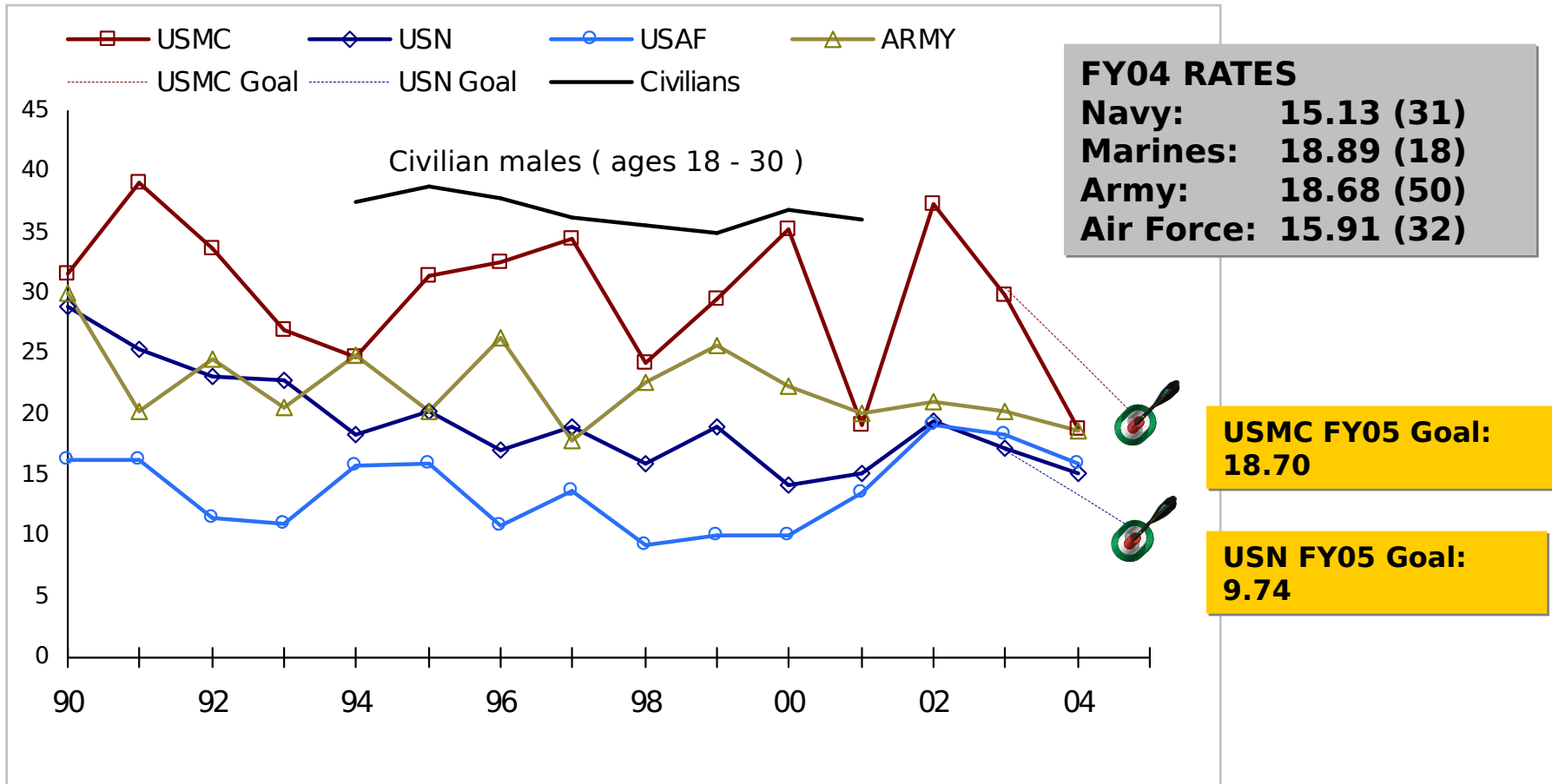
USN FY05 Goal: 9.74

NSC FY04 Data: 13 Apr 04



Traffic Death Rates

All Services FY90-04



Fatality Rates per 100,000 personnel per year

NSC Data: 13 Apr 04



Factors In Traffic Deaths

USN/USMC, FY01-03

FY01-03 Deaths: 349

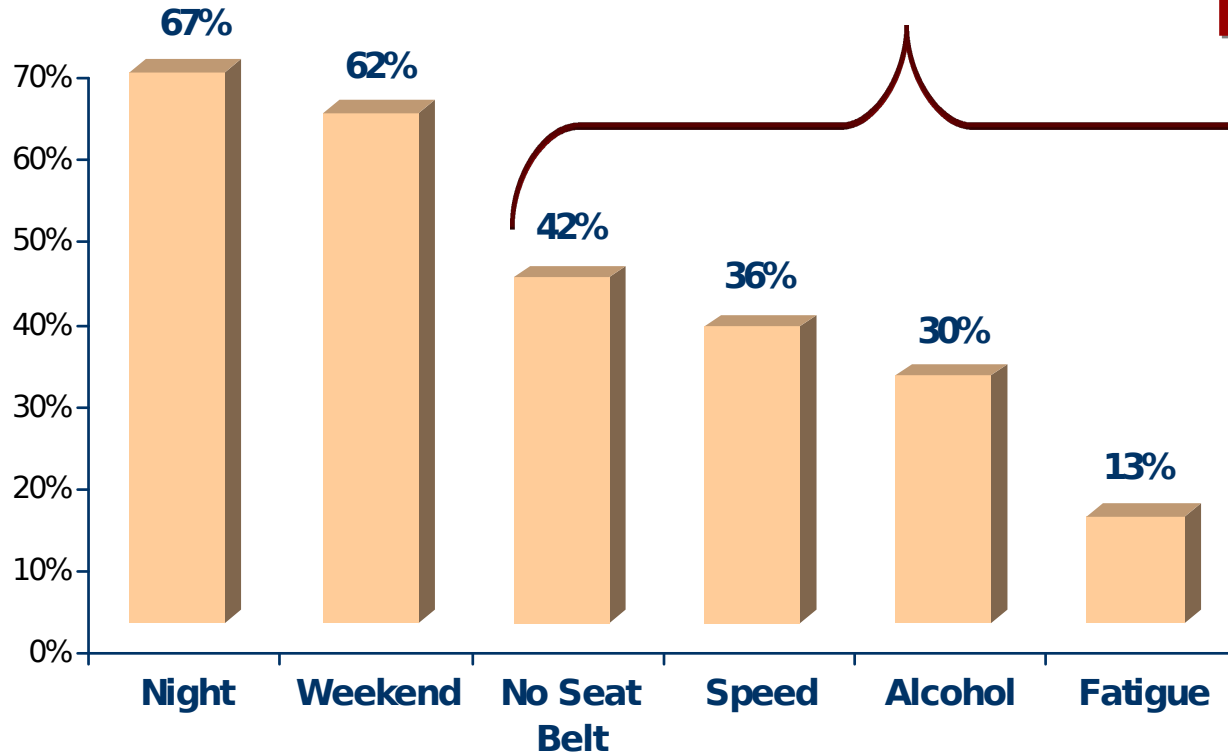
FY01: 90

FY02: 140

FY03: 119

FY04 Deaths: 49

LEADERSHIP



NSC Data: 13 Apr 04



PMV Worst Times - “Help Me With Predictions”

	USN	USMC
Day of Week	SAT: 98 (26%)	SAT: 74 (25%)
Time of Day	0200-0259: 40 (11%)	0530-0629 27 (9%)
Month	JUL: 44 (12%) AUG: 43 (11%)	APR: 35 (12%) JUL: 34 (11%)
Month/Day	JUL 14: 5 DEC 23: 5	DEC 23: 5
Day/Time	2-hr Period:	SAT 0330-0529: 16 SUN 0130-0329: 16
	1-hr Period:	SAT 0030-0129: 12
Total Fatalities	376	302



Traffic Safety

Common Problems

- ***No traffic safety coordinator***
- ***No motorcycle, AAA-DIP and/or EVOC training***
- ***No seat belt program***
- ***Mishap reporting deficiencies***
- ***No prohibition on GMV operation when license suspended or DUI/DWI***
- ***Personnel riding in cargo areas of vehicles***
- ***Not enough attention to the problem!***

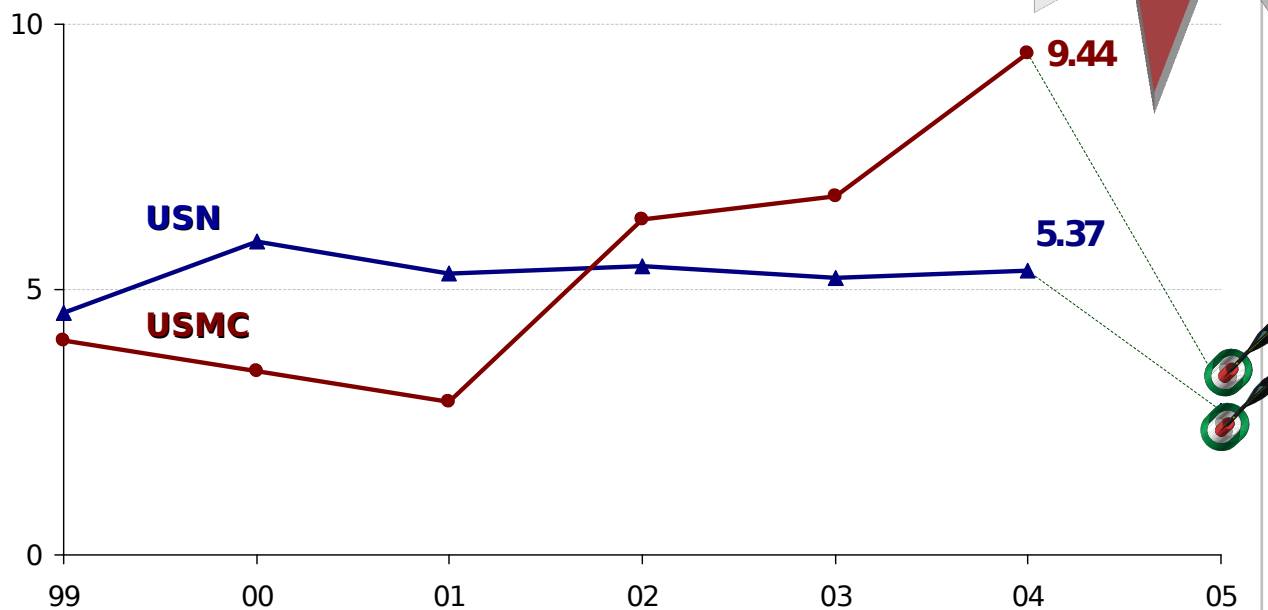


Recreation Fatality Rates

**A HUGE
CHALLENGE**

USN/USMC, FY99-04

Fatality Rates per 100,000 personnel per year



**USMC FY05 Goal:
3.16**

**USN FY05 Goal:
2.72**

NSC Data: 13 Apr 04



Off-Duty Recreation Safety

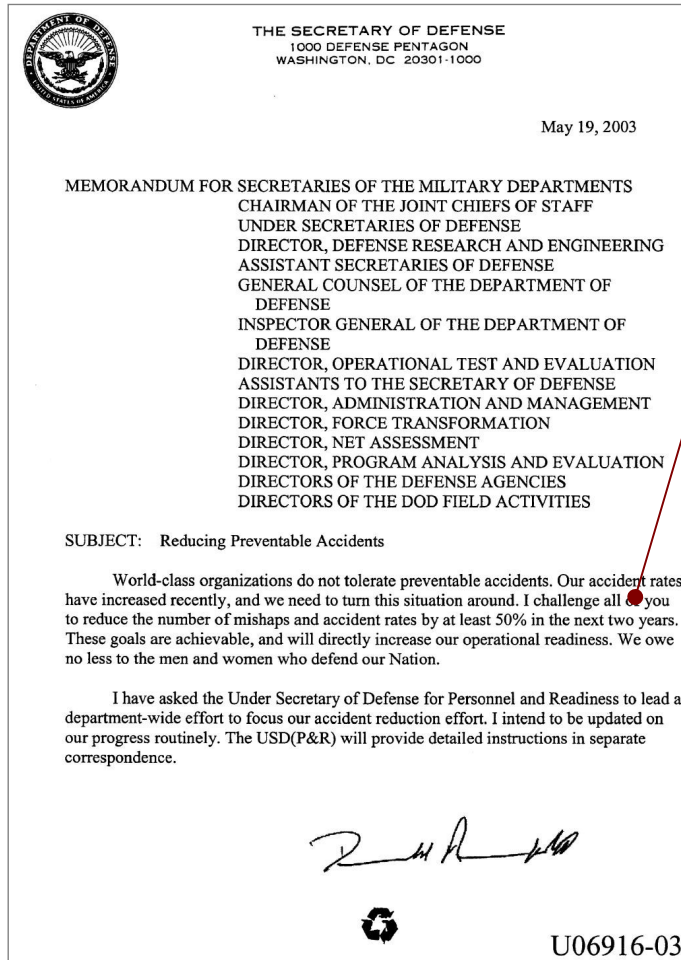
Common Problems

- ***No designated off-duty/recreation manager***
- ***No records of hazard awareness training***
- ***No record of specific hazard training for hobby shop equipment or small boats***
- ***Poor maintenance of playing fields***
- ***No PPE for cycling, skating, racquetball***
- ***Insufficient cushioning under playground equipment for fall protection***
- ***Missing guards in woodworking shops***
- ***No inspections of bleachers/grandstands***



Field of Screams

Secretary Rumsfeld's Challenge



“World-class organizations do not tolerate preventable accidents. Our accident rates have increased recently, and we need to turn this situation around. I challenge all of you to reduce the number of mishaps and accident rates by at least 50% in the next two years.”

Memorandum from Secretary of Defense, 19 May 2003



What We've Done So Far

- **Established Navy-Marine Corps Safety Council**
 - Identified Four Working Groups:
 - Afloat Safety
 - Aviation Safety
 - Shore Safety
 - Ground Tactical Safety
 - Naval Safety 50% Reduction Plan and POA&M.
 - Held initial chair/co-chair meeting 16 December 2003.
 - Held initial Flag-Level Safety Council Session 17 March 2004.
- **NSC Media Campaign**
- **USN/USMC Approach**
- **Ideas from Others**



Challenges

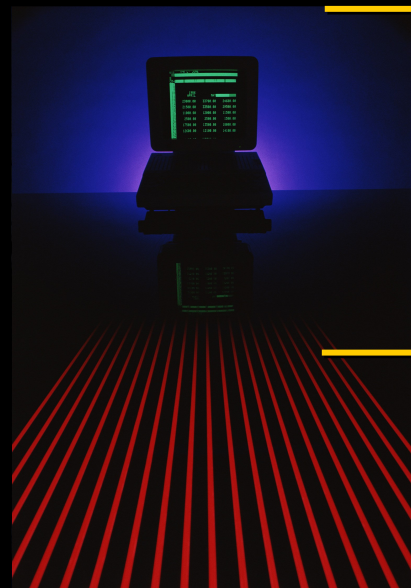
*The same approaches will
provide the same results
Time to change!*



HUMAN ERROR
- Tough One



CULTURAL CHANGE
- Takes Time



WESS
-Use Technology

Questions?

